

ADOPTION OF RISK MANAGEMENT STRATEGIES AMIDST PADDY

FARMERS OF CAUVERY DELTA ZONE IN TAMIL NADU

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ABSTRACT

Paddy farming is the main vocation of farmers in Cauvery delta agro climatic zone of TamilNadu. Rice is the staple food of TamilNadu, paddy cultivation not only ensures food security, but also is an important commercial farm activity. Thiruvavur, Thanjavur and Nagapattinam were selected as the study locations owing to its prominence due to the presence of Cauvery water irrigation. The risks faced by farmers were categorized into credit, cultivation and marketing risks. Based on the discussion with scientists, extensionists and progressive farmers, common strategies adopted by farmers to manage credit, cultivation and marketing risks were identified. Responses were collected from the farmers to measure adoption and percentage analysis of the same was carried out to arrive at the finding. Further the adoption score was correlated with profile characteristics and the results are tabulated in this study.

KEYWORDS: Credit, Cultivation, Marketing & Risk Management

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INTRODUCTION

Agriculture in Tamil Nadu is mainly dependent on the quantum of monsoon rainfall (both south west and north east). These monsoon rains coupled with a comfortable storage maintained in the major reservoirs ensure the uniform distribution and timely availability of irrigation water for rice farming in Tamil Nadu. Of the seven agro-ecological zones of Tamil Nadu, Cauvery delta zone is the major rice belt of this state, owing to its assured irrigation for rice farming. However, the vagaries of monsoon resulting in frequent drought and flood results in failure of farming. This situation is further accentuated by the delayed release of Cauvery water. According to Cauvery delta farmers, Cauvery is not just a river, it is a cultural heritage. The uncertainty over cultivation would drive younger generation away from agriculture. Ultimately, it would affect the farming community, both in terms of economics and culture. Cauvery delta system is the most extensive irrigation systems of Tamil Nadu. Cauvery delta districts regularly receives irrigation water for rice cultivation from Mettur reservoir. The cultivation pattern in the delta region has been largely influenced by the time and quantity of water released from Mettur reservoir.

According to the water regulation rules, the water is released for irrigation from Mettur reservoir on 12th June every year provided the water level in the reservoir is around 70 feet. In normal years the farmers cultivate two rice crops in a year, one from June to September – October called Kuruvai crop, followed by medium duration rice from September -October to February called Thaladi. In double crop wetlands farmers raise rice-fallow pulses in January- February. In certain lands known as single crop wetlands, only one long duration rice called Samba is

raised from July-August to November. However this cropping pattern is based on the water release from Mettur reservoir.

LITERATURE SURVEY

^[1]The vulnerability to risk exposure caused by poverty leads to risk avoidance and therefore keeps poor people away from undertaking more risk activities.

^[2]The challenges in increasing adoption of diversified agricultural management strategies are both scientific and policy based. In the scientific realm, the adoption of diversified agricultural systems could be bolstered if farmers had a better idea of how to optimize a diversified structure to maximize production and profits.

^[3]In view of higher proportion of area under rice-wheat rotation and rice being major consumer of irrigation water, the state is experiencing sharp decline in groundwater table and deterioration in the agro-economic systems. It is therefore, important to reduce area under this crop rotation in order to sustain production and agro-eco-systems of the state in the long run.

^[4]The different educational status of farmers accounts for the differential managerial ability which also determines to some extent the overall success of the farm business. The level of education contributes much for productivity, adoption of new technology and farming techniques.

PROBLEM DEFINITION

The shortage of water in Cauvery delta would result in migration of small and marginal farmers and agricultural labourers to migrate to other cities for livelihood. Further it also affects the livestock population and other plantation crops like coconut.

Apart from the drought, sudden heavy downpour and subsequent floods have also become an issue in Cauvery delta zone. Both shortage as well as excess water affected the farming systems and made an imperative change in the irrigation management and socio economic conditions of the farming community in the delta region. Considering the importance of risks endured and managed by rice farmers of Cauvery delta region an attempt was made to study their adoption of credit, cultivation and marketing risk management strategies.

METHODOLOGY

Among the districts in Cauvery delta zone, Thanjavur, Thiruvarur and Nagapattinam comprises of maximum area and hence was purposively selected. The list of blocks in three the selected districts were arranged in descending order based on the paddy area cultivated. The block in each district having maximum paddy cultivation was selected. In the same way first two maximum paddy cultivated villages were selected from each block. The list of farmers who possess rich experience in paddy cultivation from each selected village was obtained from the block level Assistant Director of Agriculture's office. Out of the total population 25 percent was decided to be chosen as sample size for this study. Thus the total respondents for the study was 239 and the research design adopted was *Ex post facto* research design.

Risks faced by farmers during rice farming and the management strategies adopted by them to combat those risks were identified after elaborate discussion with the scientists in TNAU, commercial and cooperative bank officials and progressive farmers in the study area. Thus the important risk management strategies identified were categorised under the heads: credit, cultivation and marketing risks. Viz., Credit Risks - Inadequate institutional credit, High interest rate charged

by money lenders & Procedural difficulties in sourcing institutional credit; Cultivation Risks- Erratic / unseasonal rainfall, Drought, Accumulation of silt in canals, Pests & Diseases, High input costs, Decreased soil fertility, Unavailability of organic manures, Non availability of timely labour, Absence of farm implements & No knowledge of weather updates. Marketing Risks:- Absence of storage facilities, Issues in DPC, Invasion of middle men to pull down price & Production glut- less demand.

A score of two was accorded to farmers who adopted risk management strategy and score of one was given to non-adoption of the same. Over all adoption score of a respondent was arrived by summing up all the scores of each risk management strategy. Based on the percentage analysis of adoption score for each management strategy, the extent of adoption for the same was analysed.

The adoption score was further correlated with the profile characteristics of individual respondents. Finally the constraints in adoption of risk management strategies were also considered as a part of the study.

RESULTS AND DISCUSSIONS

Extent of Adoption

Distribution of respondents according to their adoption of risk management strategies are presented in Table 1.

Table 1: Distribution of Respondents According to their Adoption of Risk Management Strategies

Sl. No	Risk Management Strategy	Extent of Adoption					
		Thanjavur District		Thiruvarur District		Nagapattinam District	
		No	%	No	%	No	%
I	Credit Risks						
1	Spending from own savings	22	25.88	48	58.54	38	52.78
2	Availing crop insurance	71	83.53	79	96.34	68	94.44
3	Availing credit from input dealer	49	57.65	39	47.56	53	73.61
II	Cultivation Risks						
1	Bore well construction	46	54.12	49	59.76	36	50.00
2	Single season cultivation of paddy	17	20.00	13	15.85	15	20.83
3	Synchronised cultivation practices	68	80.00	48	58.54	52	72.22
4	Minimal usage of chemical inputs	25	29.41	35	42.68	40	55.56
5	Variety selection based on market availability	62	72.94	70	85.37	55	76.39
III	Marketing Risks						
1	Immediate sale of produce to commission agent	55	64.71	38	46.34	49	68.06
2	Incurring more expenditure for safe hand over of the produce to DPC	30	35.29	44	53.66	23	31.94

The table reveals that with respect to credit risks, availing crop insurance was one of the major management strategy followed by availing credit facility from input dealer and lastly spending from own savings were adopted. As crop insurance was mandatory for loanee farmers, premium for insurance was automatically debited from farmers who were availing crop loans from nationalised banks and primary agricultural cooperative societies (PACS). Farmers availing loans from PACS could source inputs from them as the crop loan from cooperatives has both cash and kind component; fertilizers of their choice can be chosen from the kind component subject to the stock availability. Input dealers provide fertilizers and pesticides to farmers in credit. Farmers who purchase these inputs later repay the credit after marketing of the harvested produce. The other strategy adopted by the farmers is utilising own savings for buying seeds, fertilizers,

manures, pesticides, fungicides and for hiring labour.

Cultivation of paddy becomes hassle free when there is adequate irrigation water. The three blocks selected as study location falls under the head end of Cauvery water irrigation and has reasonable quantum of ground water availability. In order to manage water shortage during drought years where there is delayed monsoon coupled with delayed water release from Mettur dam, farmers depend on bore well irrigation. The free electricity scheme for farmers by Govt. of Tamil Nadu has further eased this process. Farmers who does not have their own bore wells resort in buying water from the resourceful farmers who have bore wells.

15 to 20% of the farmers have responded that they would resort to single season paddy cultivation in order to manage irrigation water crisis situation. When there is adequate water availability farmers cultivate either two or three paddy crop in a year. It is evident that 58 to 80 % of the farmers follow synchronised cultivation practices so that labour availability and utilisation will be effective. Minimal usage of chemicals especially pesticides were adopted as a strategy to reduce cost of cultivation. Paddy variety was chosen based on the availability of market in order to ensure immediate sale of the produce.

49 to 55% of the respondents adopted selling of the produce to commission agent as a risk management strategy. This was due to the immediate payment and as the commission agents procure harvested produce from the village immediately after harvest. Govt's direct procurement centres (DPCs) paid more than the commission agent, yet the transportation to DPC and the time delay in payment were not favourable with some respondents.

Table 2: Relationship of Profile Characteristics with Adoption of Risk Management Strategy

Sl. No	Variables	'r' Value	Partial Regression Co-Efficient	Standard Error	't' Value
1	Age	0.090 ^{NS}	-0.037	0.058	-0.645 ^{NS}
2	Educational Status	0.376**	0.334	0.334	1.000*
3	Occupational Status	- 0.031 ^{NS}	0.853	0.71	1.202**
4	Farming experience	0.087 ^{NS}	0.03	0.067	0.449 ^{NS}
5	Area under paddy cultivation	0.400**	-0.024	0.046	-0.518 ^{NS}
6	Crop diversification	0.215**	0.266	0.378	0.704*
7	Enterprise diversification	0.381**	1.413	0.801	1.765*
8	Achievement motivation	0.462**	0.038	0.113	0.338 ^{NS}
9	Information seeking behaviour	0.301**	-0.048	0.086	-0.551 ^{NS}
10	Decision making behaviour	0.534**	0.009	0.065	0.144 ^{NS}
11	Credit orientation	0.176*	0.061	0.164	0.372 ^{NS}
12	Credit quality	0.468 ^{NS}	0.993	0.306	3.249*
13	Credit adequacy	0.295**	0.811	0.537	1.510*
14	Credit utilisation	0.286**	0.048	0.16	0.300 ^{NS}
15	Credit shield	0.717**	1.194	0.207	5.771**
16	Planning orientation	0.056 ^{NS}	-0.022	0.062	-0.347*
17	Marketing behaviour	0.447**	0.077	0.018	4.205**

$$R^2 = 0.641$$

** - Significant at 0.01 level

$$F = 17.040$$

* - Significant at 0.05 level

$$\text{Constant} = 58.663$$

NS – Non Significant

Table 2 shows the relationship between the independent variables selected for the study namely Age, Educational Status, Occupational Status, Farming experience, Area under paddy cultivation, Crop diversification, Enterprise

diversification, Achievement motivation, Information seeking behaviour, Decision making behaviour, Credit orientation, Credit quality, Credit adequacy, Credit utilisation, Credit shield, Planning orientation and Marketing behaviour with the Adoption of risk management strategy as the dependent variable.

The results exhibited showed that the independent variables educational status, area under paddy cultivation, crop diversification, enterprise diversification achievement motivation, information seeking behaviour, decision making behaviour, credit adequacy, credit utilisation, credit shield and marketing behaviour showed positive significant relationship with adoption of risk management strategy at 1 per cent probability and credit orientation showed significance at 5 per cent probability.

On multiple regression analysis it was found that the extent of contribution of independent variable towards the adoption of risk management strategy it was found that 64.10 percent variation in the dependent variable is explained by the seventeen variables selected for the study. Since the 'F' value was significant at one per cent level of probability a prediction equation was fitted for the adoption of risk management strategy of paddy farmers. The prediction equation is :

$$Y = 58.663 - 0.037 (X1) + 0.334 (X2) + 0.853(X3) + 0.030(X4) - 0.024(X5) + 0.266(X6) + 1.413(X7) + 0.038(X8) - 0.048(X9) + 0.009(X10) + 0.061(X11) + 0.993(X12) + 0.811(X13) + 0.048(X14) + 1.194 (X15) - 0.022(X16) + 0.077(X17)$$

The study revealed that out of 17 independent variables, nine variables namely education status (X2), occupational status (X3), crop diversification (X6), enterprise diversification (X7), credit quality (X12), credit adequacy (X13), credit shield (X15), planning orientation (X16) and marketing behaviour (X17) were found to be influencing the dependant variable. Out of nine variables occupational status(X3), credit shield (X15) and marketing behaviour (X15) had significant relationship with the dependant variable at one per cent level of probability and the variables like educational status (X2), crop diversification (X6), enterprise diversification (X7), credit quality (X12), and credit adequacy (X13) had positive significant relationship at 5 per cent level of probability. Planning orientation (X16) had a negatively significant relationship with adoption of risk management strategy at 5 per cent level of probability.

The fitted regression model shows that a unit increase in the nine significant variables could increase the adoption of risk management strategy by 5.919 units.

The respondent farmers showed positive significance when it came to credit quality at 5 per cent level. This could probably be the reason for significance of credit shield at 1 per cent probability because crop loans availed from institutional sources like commercial and cooperative banks should mandatorily be covered under crop insurance scheme. Farmers who undertake farming as their primary occupation they have a clear idea about selling of produce which is reflected in the significance of marketing behaviour.

CONCLUSIONS

It can be concluded that the major independent variables contributing to the adoption of risk management strategies are occupational status, credit shield and marketing behaviour. More than eighty per cent of the respondents have availed crop insurance as risk management strategy along with cultivation of suitable variety as per market demand and synchronised cultivation of crops in order to avoid or adapt to the risks associated with paddy farming.

FUTURE SCOPE

This study would be helpful for the policy planners of financial institutions and the government agriculture marketing department to take adequate steps for helping paddy farmers to mitigate and manage the credit, cultivation and marketing risks. Similar study can be performed in the same cauvery delta agro climatic zone amidst the tail end irrigation locality farmers. This could give the risk management strategy adopted by farmers when there is adequate and inadequate irrigation water.

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